

Listing of Claims

1. A device for generating X-rays, which device comprises a source for emitting electrons accommodated in a vacuum space, a liquid metal for emitting X-rays as a result of the incidence of electrons, and a pumping means for causing a flow of the liquid metal through a constriction where the electrons emitted by the source impinge upon the liquid metal, said constriction being bounded by a window, which is transparent to electrons and X-rays and separates the constriction from the vacuum space, and by a wall opposite to the window, ~~characterized in that, wherein~~ at least during operation, said wall has a profile which matches a profile which the window has, during operation, as a result of a deformation of the window caused by a pressure of the liquid metal in the constriction.
2. A device as claimed in Claim 1, ~~characterized in that wherein~~ said wall is deformable by means of at least one actuator, the device further comprising at least one pressure sensor for measuring the pressure of the liquid metal in the constriction and a control member for controlling the actuator as a function of a pressure measured by means of the sensor.
3. A device as claimed in Claim 2, ~~characterized in that wherein~~ said actuator is a piezo-electric actuator.
4. A device as claimed in Claim 1, ~~characterized in that wherein~~ in the case of a deformation of the window, during operation, the constriction has a cross-sectional area which, seen in a flow direction, increases in such a manner that a reduction of the flow velocity in the flow direction takes place such that a decrease of the pressure of the liquid metal in the constriction, caused by viscous flow losses, substantially corresponds with an increase of said pressure caused by said reduction of the flow velocity.

5. A device as claimed in Claim 1, characterized in that wherein the device is provided with a flow channel for the liquid metal which successively comprises, seen in a flow direction, a converging part, said constriction, and a diverging part, wherein a center line of at least a portion of said converging part, via which the converging part is connected to the constriction, has a curvature which matches a curvature of a center line which the constriction has, during operation, in the case of a deformation of the window.

6. A device as claimed in Claim 1, characterized in that wherein the device is provided with a flow channel for the liquid metal which successively comprises, seen in a flow direction, a converging part, said constriction, and a diverging part, wherein the converging part is provided with means for generating or increasing a turbulence of the flow of the liquid metal in the constriction.

7. A device as claimed in Claim 1, characterized in that wherein a center line, which the constriction has during operation as a result of said deformation of the window, is convex, seen from the source.

8. A device as claimed in Claim 1, characterized in that wherein the window is concave, seen from the source.

9. A device as claimed in Claim 8, characterized in that wherein the window is provided with corrugations.

10. A device as claimed in Claim 9, characterized in that wherein said corrugations extend in a flow direction of the liquid metal in the constriction.

11. A device as claimed in Claim 10, characterized in that wherein the wall opposite to the window is provided with corrugations which correspond with the corrugations of the window and are in positions, seen in a direction perpendicular to the flow direction, identical to the positions of the corrugations of the window.

Clean Version of Claims

1. A device for generating X-rays, which device comprises a source for emitting electrons accommodated in a vacuum space, a liquid metal for emitting X-rays as a result of the incidence of electrons, and a pumping means for causing a flow of the liquid metal through a constriction where the electrons emitted by the source impinge upon the liquid metal, said constriction being bounded by a window, which is transparent to electrons and X-rays and separates the constriction from the vacuum space, and by a wall opposite to the window, wherein at least during operation, said wall has a profile which matches a profile which the window has, during operation, as a result of a deformation of the window caused by a pressure of the liquid metal in the constriction.
2. A device as claimed in Claim 1, wherein said wall is deformable by means of at least one actuator, the device further comprising at least one pressure sensor for measuring the pressure of the liquid metal in the constriction and a control member for controlling the actuator as a function of a pressure measured by means of the sensor.
3. A device as claimed in Claim 2, wherein said actuator is a piezo-electric actuator.
4. A device as claimed in Claim 1, wherein in the case of a deformation of the window, during operation, the constriction has a cross-sectional area which, seen in a flow direction, increases in such a manner that a reduction of the flow velocity in the flow direction takes place such that a decrease of the pressure of the liquid metal in the constriction, caused by viscous flow losses, substantially corresponds with an increase of said pressure caused by said reduction of the flow velocity.

5. A device as claimed in Claim 1, wherein the device is provided with a flow channel for the liquid metal which successively comprises, seen in a flow direction, a converging part, said constriction, and a diverging part, wherein a center line of at least a portion of said converging part, via which the converging part is connected to the constriction, has a curvature which matches a curvature of a center line which the constriction has, during operation, in the case of a deformation of the window.

6. A device as claimed in Claim 1, wherein the device is provided with a flow channel for the liquid metal which successively comprises, seen in a flow direction, a converging part, said constriction, and a diverging part, wherein the converging part is provided with means for generating or increasing a turbulence of the flow of the liquid metal in the constriction.

7. A device as claimed in Claim 1, wherein a center line, which the constriction has during operation as a result of said deformation of the window, is convex, seen from the source.

8. A device as claimed in Claim 1, wherein the window is concave, seen from the source.

9. A device as claimed in Claim 8, wherein the window is provided with corrugations.

10. A device as claimed in Claim 9, wherein said corrugations extend in a flow direction of the liquid metal in the constriction.

11. A device as claimed in Claim 10, wherein the wall opposite to the window is provided with corrugations which correspond with the corrugations of the window and are in positions, seen in a direction perpendicular to the flow direction, identical to the positions of the corrugations of the window.